THE EFFECTS OF KNOWLEDGE-ATTITUDE-PRACTICE MODEL NURSING BASED ON MATT TOOL ON DRUG COMPLIANCE, HHI SCORE, AND LIVING QUALITY OF LUNG CANCER PATIENTS UNDERGOING CHEMOTHERAPY

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ABSTRACT

Objective: To explore the effects of knowledge-attitude-practice (KAP) model nursing based on MOATT tool on drug compliance, Herth Hope Index (HHI) score, and living quality of lung cancer patients undergoing chemotherapy.

Methods: 95 patients with lung cancer treated in the hospital from January 2017 to December 2019 were chosen as the subjects; they were grouped into two according to the random number table technique. Forty-seven subjects in the control group received routine nursing, while 48 subjects in the study group received the KAP model nursing on the basis of the MOATT tool. The drug compliance, HHI score, living quality, and self-management efficacy before and after the intervention were compared in the groups.

Results: After the intervention, the scores of Morisky Medication Adherence Scale-8 items (MMAS-8) of the groups were higher than those before the intervention (P<0.05), and the MMAS-8 scores of the study group were higher compared to the control (P<0.05). After the intervention, the HHI scores of the groups were higher than those before the intervention (P<0.05), and the HHI score of the study group was higher compared to the control group (P<0.05). After the intervention, the scores of each dimension and the total score of Functional Assessment of Cancer Therapy-Lung (FACT-L) of the groups were higher than those before the intervention (P<0.05), and the scores of each dimension and the total score of FACT-L of the study group were higher than those of the control group (P<0.05). After the intervention, the score of each dimension and the total score of cancer self-management efficacy scale of the groups were higher than those before the intervention (P<0.05), and the score of each dimension and the total score of cancer self-management efficacy scale of the study group were higher compared to the control (P<0.05).

Conclusion: The KAP model nursing on the basis of the MOATT tool can significantly improve the drug compliance, living quality, hope level, and self-management efficiency of lung cancer patients undertaking chemotherapy.

Keywords: MOATT Tool, knowledge-attitude-practice model nursing, lung cancer chemotherapy, drug compliance, herth hope index, living quality.

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Introduction

Lung cancer is a malignant tumor, and non-small cell carcinoma is a prevalent type of lung cancer[1]. Investigations have shown that this disease has a high incidence. About 75% of the patients have been diagnosed with medium and advanced cancer and are unsuitable for surgical treatment[2]. Although chemotherapy may extend the survival time of patients, the chemotherapy reaction will also coexist. The psychological burden of patients will certainly be aggravated, and their living quality will be reduced significantly during chemotherapy[3]. Many studies have indicated that nursing intervention is essential during chemotherapy[4]. The MOATT tool is a health education tool developed for patients taking chemotherapy drugs orally. It includes four stages, namely assessment, general education,

special drug education, and evaluation, to provide systematic and comprehensive information support and health education for patients[5].

KAP model nursing emphasizes behavioral intervention and promotes patients' health from three aspects, namely knowledge acquisition, belief formation, and behavior cultivation[6]. Accordingly, this study carried out KAP model nursing based on the MOATT tool for lung cancer patients undergoing chemotherapy, as described below.

Materials and methods

Clinical data

Ninety-five patients with lung cancer undergoing chemotherapy, treated in our hospital from January 2017 to December 2019, were chosen as the subjects and grouped into two according to the random number table technique. In the control group, there were 47 cases, including 36 males and 11 females, aged 47 to 89 years, with an average age of (59.02±4.38) years.

TNM staging: 17 cases in the T1 stage and 15 cases in the T2 stage. In the study group, there were 48 cases, including 34 males and 14 females, aged 46 to 90 years, with an average age of (58.46±4.42) years.

TNM staging: 18 cases in the T1 stage, 17 cases in the T2 stage, and 13 cases in the T3 stage. Based on the comparison, no significant difference was observed in general data among the groups (P>0.05), indicating comparability.

Inclusion and exclusion criteria
Inclusion criteria:
• Diagnosed as "non-small cell lung cancer" and confirmed by iconography and pathology[7];
Confirmed to meet the indications of chemotherapy by relevant examinations;
• Given chemotherapy, namely doxycycline of pemetrexed combined with cisplatin;
• Voluntary participation and have signed informed consent.
Exclusion criteria:
• Estimated survival time less than 6 months;
• No normal communication ability and capacity for action, or (previously) suffering from mental illness;
• Serious complications before inclusion in this study;
• Suffering from other tumors simultaneously;
• Lack of clinical data.

Nursing methods

The control group
Routine nursing was given, including admission guidance, telling patients to keep personal hygiene, introducing lung cancer-related knowledge and chemotherapy-related knowledge to patients, ward cleaning. The ward should be neat and clean, and suitable for physical and mental cultivation, and so on.

Study group
KAP model nursing based on the MOATT tool.

Nursing intervention based on MOATT tools specifically includes:
• Evaluation stage: evaluation of key issues, which fully considers the patient's personality characteristics, including chemotherapy plan, whether there are symptoms affecting medication, and understanding of chemotherapy regimen, etc.
• General education stage: correct medication method of chemotherapy regimen, instructions for storage of drugs related to chemotherapy regimen, clear understanding of specific contents of chemotherapy regimen, etc.
• Special drug stage: informing the patients of the special information when using the chemotherapy regimen, including the drug name, potential side effects, and coping plans.
• Evaluation stage: evaluating the patients' mastery of the above information, and randomly selecting patients, and asking questions, including chemotherapy regimen, medication method, and potential side effects.

Based on the above nursing intervention, the KAP model nursing was carried out as follows:
• Knowledge acquisition: based on the patient's cultural background and personality characteristics, different propaganda and education methods (such as one-on-one conversation, distribution of the health manual made by the department, etc.) were used, and individualized introduction of lung cancer-related knowledge and chemotherapy regimen-related knowledge were provided to patients. Relevant medical staff paid close attention to patients' chemotherapy reactions, gave timely information support, and helped them increase their awareness of chemotherapy regimens and realize that chemotherapy reactions could be prevented by strengthening self-management. The propaganda plan and specific education plan were adjusted according to the actual situation of patients.

In addition, team education lectures were held every month for 1h/ time, and information exchange meetings were held every month for patients to share experiences with one another.

• Belief formation: it was found that female patients, elderly patients, and patients with poor mental states were more likely to have chemotherapy reactions before chemotherapy. Through repeated communication and education, patients' misconceptions were corrected, and patients were assisted in increasing their cognition and building up their beliefs so that they could face up to diseases and understand chemotherapy. Hence, nurses encouraged patients by emphasizing the beneficial effects of correct cognition and firm belief on disease treatment helped them to consolidate their changed cognition and belief and encouraged them to express their emotions.

• Behavior cultivation: guidance was given on diet, spirit, exercise, and other aspects. Patients were required to record every chemotherapy, including the occurrence of chemotherapy reaction and the countermeasures taken; patients were assisted in mastering the chemotherapy time. Their diet plans were formulated together with the hospital nutritionist according to their dietary preferences and chemotherapy condition. The patients had many meals but little food at each, and they had more digestible food with high vitamins and high protein, such as squid soup; the patients also took daily muscle relaxation training; and so on.

Intervention time of two groups
4 chemotherapy cycles.

Observation indicators

Comparison of drug compliance
MAS-8 drug compliance questionnaire[8] was employed to assess the patient's drug compliance. The total score of Morisky Medication Adherence Scale-8 items (MMAS-8) is 8 points, indicating high drug compliance. The lower the score, the worse the drug compliance. Drug compliance was evaluated before the intervention and after the intervention.

• Comparison of Herth Hope Index (HHI) [9] scores. HHI was used to evaluate patients' hope levels. The score of HHI is 12-48 points. The total score of HHI, namely 48 points, indicates high hope level. The lower the score, the lower the hope level. The HHL was evaluated before the intervention and after the intervention.

• Comparison of living quality. The Functional Assessment of Cancer Therapy-Lung (FACT-L)[10] was employed to assess the patients' living quality. The total score of FACT-L is 144 points, indicating high living quality. The lower the score, the lower the living quality. The hope level was evaluated before the intervention and after the intervention.

• Comparison of self-management efficacy. The Chinese version of the cancer self-management efficiency scale[11] was used to evaluate patients' self-management efficacy. The self-management efficacy scale was used for the evaluation of self-management efficacy of cases before and after nursing. The scale's total score is 145 points, indicating high self-management efficacy. The lower the score, the lower the self-management efficacy. The self-management efficacy was evaluated before the intervention and after the intervention.

Statistical processing
In this study, the data were analyzed using SPSS 22.0, and the measurement data conformed to normal distribution were stated as mean standard ± deviation. Independent sample t-test was employed to compare groups, and paired sample t-test was employed to compare groups; counting the data was stated in percentage, and the test was employed to compare groups. The test level $\alpha = 0.05$ and $P<0.05$ showed the difference to be statistically significant.

Results

Comparison of drug compliance between the groups before and after the intervention
According to the comparison of the MMAS-8 score of the groups before the intervention, no significant difference was observed ($P>0.05$). The MMAS-8 score of the groups after the intervention was higher than those before the intervention ($P<0.05$), and the MMAS-8 score of the study group was higher compared to the control ($P<0.05$). (See Table 1).

Group	Case	Before intervention	After intervention	*t*	*P*
Control group	47	4.36±1.05	5.01±1.24	2.743	0.007
Study group	48	4.45±1.12	6.35±1.56	6.855	0.000
t	-	0.404	4.629	-	-
P	-	0.687	0.000	-	-

Table 1: Comparison of drug compliance before and after the intervention (x̄±s, point).

Comparison of HHI score between the two groups before and after the intervention

According to the comparison of the HHI score of the groups before the intervention, no significant difference was observed (P>0.05). The HHI scores of the two groups after the intervention were higher than those before the intervention (P<0.05), and the HHI score of the study group was higher compared to the control (P<0.05). (See Table 2).

Group	Case	Before intervention	After intervention	t	P
Control group	47	30.52±5.94	35.21±3.79	4.563	0.000
Study group	48	31.06±5.83	40.65±4.08	9.337	0.000
t	-	0.447	6.730	-	-
P	-	0.656	0.000	-	-

Table 2: Comparison of HHI scores before and after intervention (x̄±s, point).

Comparison of living quality between the two groups before and after the intervention

According to the comparison of the score of each dimension and the total score of FACT-L of the groups before the intervention, no significant difference was observed (P>0.05). After the intervention, the scores of each dimension and the total score of FACT-L of the two groups were higher than those before intervention (P<0.05), and the scores of each dimension and the total score of FACT-L of the study group were higher than those of the control (P<0.05) (See Table 3).

Comparison of self-management efficacy between the two groups before and after the intervention

According to the comparison of the score of each dimension and the total score of the self-management efficacy scale of the groups before the intervention, no significant difference was observed (P>0.05). After the intervention, the scores of each dimension and the total score of self-management efficacy scale of the groups were higher than those before the intervention (P<0.05), and the scores of each dimension and the total score of self-management efficacy scale of the study group were higher compared to the control (P<0.05) (See Table 4).

Group	Case	Positive attitude		Self-decompression	
		Before intervention	After intervention	Before intervention	After intervention
Control group	47	39.38±12.07	46.92±12.65▲	29.75±9.06	34.55±9.68▲
Study group	48	40.02±12.34	54.23±12.97▲	30.94±9.63	40.63±10.32▲
t	-	0.255	2.780	0.620	2.960
P	-	0.799	0.007	0.537	0.004

Group	Case	Self-decision		Total score	
		Before intervention	After intervention	Before intervention	After intervention
Control group	47	8.75±2.54	10.34±1.63▲	77.88±7.89	91.81±7.99
Study group	48	9.16±2.67	12.93±2.24▲	80.12±8.11	107.79±8.51
t	-	0.767	6.433	1.364	9.431
P	-	0.445	0.000	0.176	0.000

Table 4: Comparison of self-management efficacy between two groups before and after intervention (x̄±s, point).
Note: ▲P<0.05 compared with those before the intervention (the same group).

Group	Case	Daily life		Social/family condition		Emotional status	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group	47	18.41±3.31	20.72±3.82▲	19.78±3.57	22.22±3.81▲	15.96±3.63	18.62±3.72▲
Study group	48	17.34±3.19	22.64±3.45▲	20.75±2.81	23.79±3.42▲	15.15±2.89	20.11±3.26▲
t	-	1.604	2.572	1.473	2.115	1.205	2.077
P	-	0.112	0.012	0.144	0.037	0.231	0.041

Group	Case	Capacity for act		Other factors		Total score	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group	47	17.41±4.02	19.16±3.91▲	21.85±4.32	24.34±3.52▲	93.41±3.77	105.06±3.76
Study group	48	18.68±3.95	22.62±3.79▲	22.53±3.62	26.44±2.72▲	94.45±5.49	115.60±5.55
t	-	1.553	4.380	0.832	3.258	1.074	10.814
P	-	0.124	0.000	0.407	0.002	0.286	0.000

Table 3: Comparison of living quality between two groups before and after intervention (x̄±s, point).
Note: ▲P<0.05 compared with those before the intervention (the same group).

Discussion

Drug compliance in lung cancer patients undergoing chemotherapy is affected by multiple factors, including family economic status and self-awareness. Among them, factors related to lung cancer chemotherapy are important factors affecting drug compliance in these patients. During chemotherapy, the inevitable chemotherapy reaction has an adverse effect on the drug compliance of most patients. MMAS-8 can objectively evaluate patients' drug compliance, and appropriate intervention measures taken according to patients' scores can significantly reduce the degree of chemotherapy reaction and keep patients' high drug compliance[12]. This study results disclosed that the MMAS-8 score of the study group was higher compared to the control group after the intervention, indicating that the application of KAP nursing based on the MOATT tool might significantly enhance the drug compliance of patients with lung cancer undergoing chemotherapy. According to the analysis, KAP nursing based on the MOATT tool could put forward a positive coping style and reasonable prevention plan for chemotherapy reaction and significantly reduce the pain caused by chemotherapy reaction. At the same time, it could guarantee the smooth implementation of chemotherapy regimens by providing nutritional support and increasing patients' cognition, thus improving patient's drug compliance.

Patients with lung cancer undergoing chemotherapy suffer from physiological and psychological pain, often accompanied by severe psychological stress. According to theories of positive psychology, hope, as an internal force, can inspire the individual's internal potential to improve the psychological state and reduce the degree of the psychological stress response, thus promoting the individual's physical and mental health. Clinical studies on the hope of cancer patients have found that tumor stage, social support, and treatment methods will affect the hope level of cancer patients, which further confirms that hope is an important aspect in the cancer treatment process. Therefore, for patients with lung cancer undergoing chemotherapy, the increase in hope plays a role in psychological adjustment and promotion and helps to improve the living quality of patients. Hope level refers to the dynamic strength level of an individual's positive promotion to sustainability, and HHI is a commonly used tool to evaluate hope level[13]. This research showed that the HHI score of the study group was higher compared to

the control group after the intervention, indicating that the application of KAP nursing based on the MOATT tool could significantly enhance the hope level of lung cancer patients undergoing chemotherapy. According to the analysis, KAP nursing based on the MOATT tool helped patients realize the important role of themselves in disease treatment through cognitive intervention. The personnel can only play an auxiliary role. In other cases, they need to rely on themselves, fully mobilize their subjective initiative, and adopt a positive attitude to deal with the treatment.

FACT-L was originally developed by American scholars and then translated into Chinese by Wan Chonghua et al.[14, 15]. It is suitable for evaluating the living quality of patients with lung cancer undergoing chemotherapy. The results of this study showed that the scores of each dimension and the total scores of FACT-L of the study group after the intervention were higher compared to the control group, indicating that the application of KAP nursing based on the MOATT tool could significantly improve the living quality of patients with lung cancer undergoing chemotherapy. The main reasons are that the KAP model focuses on helping patients to form correct and firm beliefs and cultivate health-related behaviors. It can promote the improvement of patients' physical and mental states, enable patients to adhere to various treatments and nursing according to the doctor's advice, and face up to the lung cancer and chemotherapy reactions, hence improving the living quality of patients.

This research indicated that the scores of each dimension and total scores of cancer self-management efficacy scale of the study group after the intervention were higher compared to the control group, signifying that the application of KAP nursing on the basis of the MOATT tool could significantly improve the self-management efficacy of patients with lung cancer undergoing chemotherapy. According to the analysis, both the MOATT tool and KAP model focused on patients' cognitive intervention. By introducing lung cancer-related knowledge and chemotherapy-related knowledge, patients could maintain a high cognitive level. The process of cognition change and improvement is also a process of gaining self-identity and a sense of responsibility. Patients gradually affirmed their self-worth, and their self-management efficacy was improved. To sum up, the application of KAP nursing based on the MOATT tool can significantly improve drug compliance, living quality, hope level, and self-management efficiency of patients with lung cancer undertaking chemotherapy.

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